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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,676	03/30/2001	Cai-Zhong Jiang	MBI - 0034	6125

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WILEY, REIN & FIELDING, LLP  
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WASHINGTON, DC 20006

EXAMINER

COLLINS, CYNTHIA E

ART UNIT PAPER NUMBER

1638

DATE MAILED: 05/06/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/823,676

Applicant(s)

JIANG, CAI-ZHONG

Examiner

Cynthia Collins

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,17 and 19-24 is/are pending in the application.
- 4a) Of the above claim(s) 19-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

The Amendment filed February 3, 2003, paper no. 13, has been entered.

Claims 3-16 and 18 are cancelled.

Claims 1, 2 and 17 are newly amended.

Claims 19-24 are newly added.

Claims 1, 2, 17 and 19-24 are pending.

Claims 19-24 are withdrawn from consideration.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

All previous objections and rejections not set forth below have been withdrawn.

***Election/Restrictions***

Newly submitted claims 19-24 are directed to inventions that were previously restricted but not elected. Since Applicants have received an action on the merits for the originally elected invention, claims 19-24 withdrawn from consideration.

***Claim Rejections - 35 USC § 112***

Claim 1 remains rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention, for the reasons of record set forth in the office action mailed October 2, 2002.

Applicants' arguments filed February 3, 2003, have been fully considered but they are not persuasive.

Applicants argue that the specification teaches how one of skill in the art can make a nucleotide sequence encoding conservatively substituted polypeptide variants of SEQ ID NO:2, as well as silently substituted nucleotide sequences of SEQ ID NO:1, and point out that claim 1(g) and 3(g) include a functional limitation as originally filed. Applicants point to Figure 1 which shows the alignment of the polypeptides of SEQ ID NOS:2, 4 and 8, and to page 36 which discloses that expression of SEQ ID NOS: 8 or 4 increases biomass in transgenic plants. Applicants also point out that many of the amino acid differences between the polypeptides are not conservative substitutions and yet the polypeptides exhibit similar function. Applicants additionally point to Table 1 which discloses how nucleotide codon sequences may be silently substituted to encode the same amino acid residue, and argue that one skilled in the art would recognize that since silent substitutions in a nucleotide sequence do not change the amino acid sequence it encodes, one skilled in the art would reasonably believe Applicants had possession of a variant of SEQ ID NO:1 with silent substitutions. Applicants further argue that the disclosure of SEQ ID NOS: 1 and 2, together with Tables 1 and 2 and their disclosure of a function, provides an adequate description of the claimed genus (reply pages 6-7).

The Office maintains that the specification fails to describe specific nucleotide sequences encoding conservatively substituted polypeptide variants and specific nucleotide sequences comprising silent substitutions. The disclosure of SEQ ID NO:1 and SEQ ID NO:2 is not representative of sequences having silent substitutions. One skilled in the art is not reasonably apprised that Applicants are in possession of sequences having silent substitutions. The Office

further maintains that disclosure of a general teaching of how to make a nucleotide sequence encoding conservatively substituted polypeptide variants of SEQ ID NO:2 or silently substituted nucleotide sequences of SEQ ID NO:1 does not describe the structure or function of nucleotide sequences which encode conservatively substituted polypeptide variants of SEQ ID NO:2 or which are silently substituted nucleotide sequences of SEQ ID NO:1. With respect to Figure 1, the alignment of the polypeptides of SEQ ID NOS:2, 4 and 8 depicts only the identity and location of amino acids that are common between the three sequences. Neither Figure 1 nor the specification indicate which amino acids of SEQ ID NO:2 may be conservatively substituted without altering the function of the polypeptide. With respect to Table 1, the table discloses only what is known in the prior art, namely which nucleic acid codons correspond to specific amino acids. Table 1 does not describe specific silent substitutions of SEQ ID NO:1. Similarly, with respect to Table 2, the table discloses only what is known in the prior art, namely which amino acids are considered to be conservative substitutes for each other. Table 2 does not describe specific conservative substitutions of SEQ ID NO:2.

Claims 1-2 and 17 remain rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated polynucleotide of SEQ ID NO: 1 encoding a polypeptide of SEQ ID NO:2 that increases plant biomass when overexpressed in a transgenic *Arabidopsis* plant, and for a transgenic *Arabidopsis* plant comprising a polynucleotide of SEQ ID NO:1 or a polynucleotide encoding SEQ ID NO:2, said plant exhibiting increased expression levels of SEQ ID NO:1 and an increased biomass as compared to a nontransformed *Arabidopsis* plant, does not reasonably provide enablement for other isolated polynucleotides, or for

transgenic plants comprising other polynucleotides or exhibiting other phenotypic characteristics as a consequence of altered levels of expression of other polynucleotides, for the reasons of record set forth in the office action mailed October 2, 2002.

Applicants' arguments filed February 3, 2003, have been fully considered but they are not persuasive.

Applicants point to their response to the written description rejection, and further point to page 11 of the specification which discloses the wash stringency conditions recited in currently amended claim 1, and pages 10-11 which disclose the conserved amino acids recited in currently amended claim 1. Applicants argue that the conserved 18mer may have silent substitutions as disclosed in Table 1 such that the encoded amino acid residue sequence is unchanged. Applicants also argue that since a polynucleotide with at least 70% sequence identity to the nucleotide sequence of 1(f) has less than 1 in 3 nucleic acid substitutions, such a polynucleotide would comprise silent substitutions. Applicants also point to page 36 which discloses that SEQ ID NO:8 shares 78% sequence identity over the conserved domain of SEQ ID NO:2 (reply pages 9-11).

The Office maintains its position that the specification does not provide sufficient guidance for one skilled in the art to practice the full scope of the claimed invention. In particular, the specification does not provide sufficient guidance with respect to what alterations may be made in SEQ ID NOS:1 or 2 such that the function of increasing a plant's biomass is retained. While the specification discloses the identity and location of amino acids that are common between SEQ ID NOS:2, 4 and 8, the specification does not disclose a correlation between any structurally conserved region and the function of increasing plant biomass. The

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Office also disagrees that polynucleotides with at least 70% sequence identity to the nucleotide sequence of 1(f) would comprise silent substitutions only, since even one change in a single nucleotide could alter a codon, and 1(h) is not limited to nucleotide changes that result only in silent substitutions. With respect to the disclosure that SEQ ID NO:8 shares 78% sequence identity over the conserved domain of SEQ ID NO:2, the relevance of this observation to the enablement of the claimed invention is unclear, as the specification does not disclose the functional significance, if any, of the conserved domain.

Claim 1 remains rejected under 35 U.S.C. 112, second paragraph, as being indefinite in the recitation of "the complement thereof" for the reasons of record set forth for the phrase "complementary nucleotide sequence thereof" in the office action mailed October 2, 2002.

Applicants' arguments filed February 3, 2003, have been fully considered but they are not persuasive.

Applicants argue that amendment of the claim to recite "the complement thereof" should overcome the rejection because this phrase encompasses the same meaning as "fully complementary nucleotide sequence thereof".

The amendment of the claim to recite "the complement thereof" does not overcome the rejection because this phrase does not limit the nucleotide sequence to any particular size complement. Furthermore, the wording of the phrase is now unclear with respect to what "the complement thereof" modifies in part (a), as the phrase appears to modify a polypeptide comprising SEQ ID NO:2" rather than "a nucleotide sequence".

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in the recitation of "increases", because "increases" is a relative term lacking a comparative basis.

***Claim Rejections - 35 USC § 102***

Claims 1-2 and 17 remain rejected under 35 U.S.C. 102(b) as being anticipated by Zhang et al. (The Plant Cell, 1992, Vol. 4, pages 1575-1588, Applicant's IDS), for the reasons of record set forth in the office action mailed October 2, 2002.

Applicants' arguments filed February 3, 2003, have been fully considered but they are not persuasive.

Applicants argue that the claims as amended distinguish the claimed invention from the prior art (reply pages 15-16).

The Office maintains that Zhang et al. anticipate the claimed invention, as the recombinant polynucleotides of the claimed invention still are not limited to polynucleotides that are fully complementary to a nucleotide sequence of SEQ ID NO:1 or encoding SEQ ID NO:2, as complement encompasses a single nucleotide base.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**



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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

*Remarks*

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Collins whose telephone number is (703) 605-1210. The examiner can normally be reached on Monday-Friday 8:45 AM -5:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on (703) 306-3218. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

CC  
May 2, 2003

DAVID T. FOX  
PRIMARY EXAMINER  
GROUP 180 1638

*Accepted 7/2*  
*for*  
*Phuong Bui*